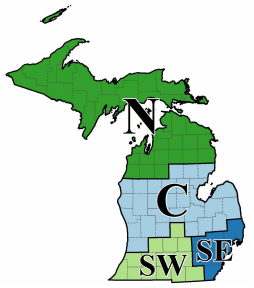

MI FluFocus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

Michigan Department of Community Health
MDCH
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Current Influenza Activity Levels:

- **Michigan:** No activity
- **United States:** Reporting has concluded for the 2009-2010 influenza season

Updates of Interest:

- **National:** ACIP publishes influenza vaccination recommendations for 2010-2011.
- **National:** Recent national influenza activity is summarized in an MMWR article.

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Influenza Surveillance Reports

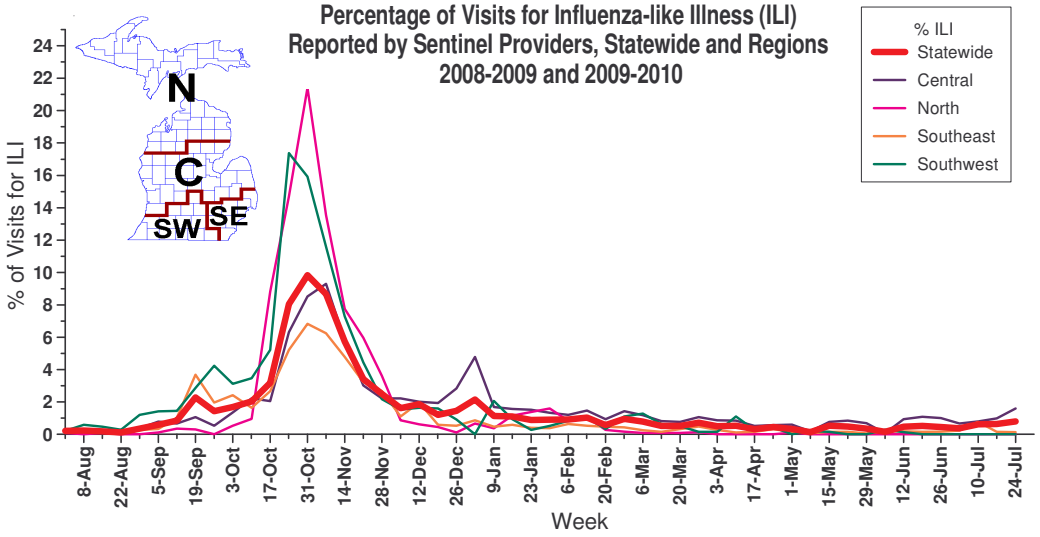
Michigan Disease Surveillance System: MDSS data for the week ending July 24th indicated that aggregate influenza case reports remained at baseline summer levels. Individual reports, including influenza and 2009 novel influenza cases, remained near the previous week's reported levels of little to no activity. Aggregate influenza cases are similar to levels seen during the same reporting period in 2009, while individual influenza reports are slightly lower.

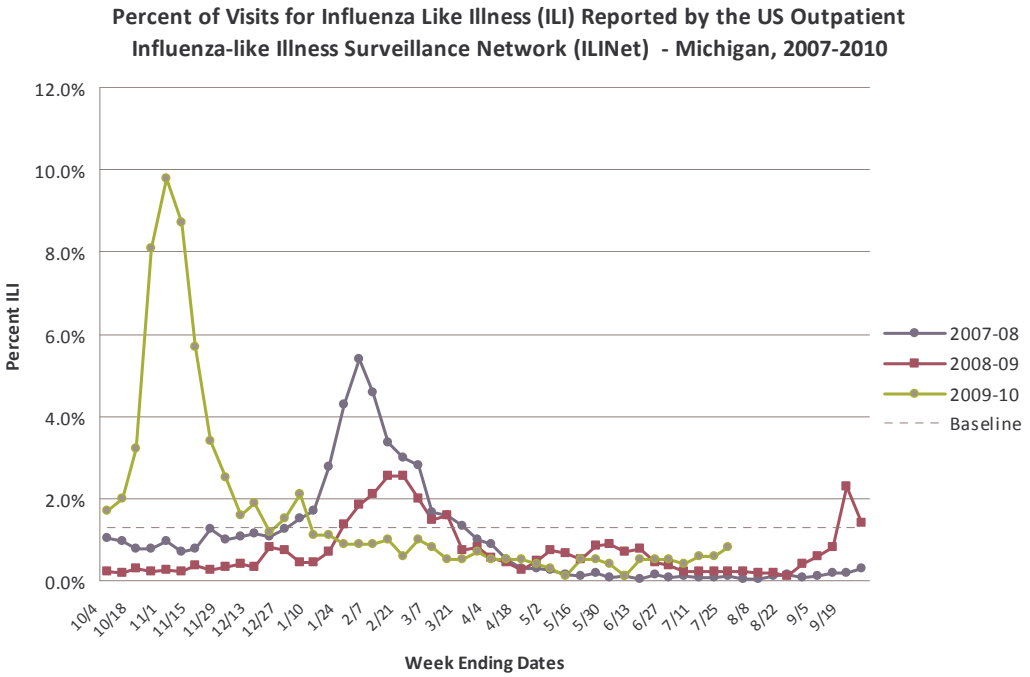
Emergency Department Surveillance: Emergency department visits from constitutional complaints were comparable to the previous week's levels, while respiratory complaints decreased slightly. Respiratory complaints have slowly but steadily declined since late February. Both constitutional and respiratory complaints are at similar levels compared to the same reporting period last year. In the past week, there were four constitutional alerts in the C(3) and SW(1) Influenza Surveillance Regions and two respiratory alerts in the C(1) and SW(1) Regions.

Over-the-Counter Product Surveillance: Over the past week, OTC product sales of cough/cold aides, children's electrolytes and chest rubs remained similar to last week's levels, while thermometer sales increased slightly. All indicators are consistent with levels seen at this time last year, except for chest rubs, which are slightly increased, and cough/cold aides, which are moderately increased.

Sentinel Provider Surveillance (as of July 29): During the week ending July 24, 2010, the proportion of visits due to influenza-like illness (ILI) slightly increased to 0.8% overall. Thirty-nine patient visits due to ILI were reported out of 4,870 office visits. Eighteen sentinel sites provided data for this report. Activity slightly increased in one surveillance region: Central (1.6%); this increase was only seen by one sentinel site. Activity remained the same in one region: Southeast (0.1%); and no ILI activity was reported in the remaining two regions: Southwest and North. Please note that these rates may change as additional reports are received.

As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.





Laboratory Surveillance (as of July 24): During July 18-24, no influenza isolates were identified at the MDCH Bureau of Laboratories. For the 2009-2010 season (starting on October 4, 2009), MDCH BOL has identified 611 influenza isolates:

- 2009 Influenza A (H1N1): 609
- Influenza A (H3): 1
- Influenza B: 1

Six sentinel laboratories reported for the week ending July 24, 2010. All laboratories (SE, SW, C, N) reported no influenza A or B positive test results, with very few specimens being tested. One SW Region lab reported two positive adenovirus results, and one lab in the SE Region noted one RSV positive.

Michigan Influenza Antigenic Characterization (as of July 29): One 2009 H1N1 influenza A virus from Michigan has undergone further characterization at the CDC. This virus was characterized as A/California/07/2009 (H1N1)-like, which is the recommended strain for the H1 component of the 2010-11 Northern Hemisphere vaccine.

Michigan Influenza Antiviral Resistance Data (as of July 29): MDCH has received 33 results for antiviral resistance testing for the 2009-2010 season. All of the specimens tested were pandemic 2009 influenza A (H1N1) viruses. Of these results, one virus did show resistance to oseltamivir. This virus was obtained in November 2009 from a 3 year old child with an underlying immunosuppressive condition from the SE Region and had a multiple courses of oseltamivir prior to specimen collection. Further

epidemiologic investigation is ongoing. The 33 specimens tested were distributed as follows: 8 Southeast, 8 Southwest, 9 Central, 2 North, 6 unknown.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at http://www.cdc.gov/H1N1flu/recommendations.htm.

Influenza-Associated Pediatric Mortality (as of July 29): Five 2009 H1N1 influenza-associated pediatric mortalities (SE(3), SW, N) have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of July 29): Seven congregate setting outbreaks with confirmatory novel influenza A H1N1 testing (2SE, 3 SW, 1C, 1N), and three outbreaks associated with positive influenza A tests (2C, 1N) have been reported to MDCH for the 2009-2010 influenza season. These are 8 school facilities and 2 long term care facilities. Human metapneumovirus was confirmed in one outbreak in a long term care facility (SW) in February. Adenovirus was confirmed from one outbreak in an elementary school (SW) in May.

During fall 2009, 567 influenza-related school and/or district closures in Michigan (Public Health Preparedness Region 1 - 55, Region 2N - 4, Region 2S – 8, Region 3 - 54, Region 5 - 153, Region 6 - 100, Region 7 - 109, Region 8 - 84) were reported.

National: To access previous Center for Disease Control and Prevention weekly surveillance reports, visit http://www.cdc.gov/flu/weekly/fluactivity.htm.

National (ACIP, July 29): The Advisory Committee on Immunization Practices (ACIP) issued their recommendations for the prevention and control of influenza for the 2010-2011 influenza season, which is available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr59e0729a1.htm?s_cid=rr59e0729a1_e.

National (MMWR 59(29);901-908, early release on July 29): An article titled “Update: Influenza Activity -United States, 2009-10 Season” summarizes recent influenza activity in the United States and is available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5929a2.htm?s_cid=mm5929a2_e. A summary is provided below.

During the 2009--10 influenza season, the second wave of influenza activity from 2009 pandemic influenza A (H1N1) occurred in the United States; few seasonal influenza viruses were detected. Influenza activity* peaked in late-October and was associated with higher pediatric mortality and higher rates of hospitalizations in children and young adults than in previous seasons. The proportion of visits to health-care providers for influenza-like illness (ILI), as reported in the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), was among the highest since ILI surveillance began in 1997 in its current form.

International (WHO Pandemic Update 110 edited], July 23): Globally pandemic influenza activity remains low. The most active areas of influenza transmission remained in the tropical zones; primarily in West Africa, Central America, the Caribbean, and South and Southeast Asia, although activity is localized to relatively small areas in each region. In the temperate zone of the southern hemisphere, Australia and New Zealand have showed signs of increased respiratory disease in recent weeks. Both countries have continued to detect low levels of predominantly pandemic H1N1 influenza virus. In South Africa, the influenza season is well under way and is predominantly associated with seasonal influenza B and H3N2 viruses and small numbers of pandemic H1N1 influenza viruses.

In the temperate zone of the southern hemisphere, overall influenza activity remained low but with notable increases in recent weeks in some areas. South Africa had been experiencing a sharp increase in the proportion of respiratory samples testing positive for influenza viruses since late June 2010. For the current reporting week, 30-40% of sentinel respiratory samples from patients with severe acute respiratory infections (SARI)/influenza-like-illness (ILI) tested positive for influenza. Respiratory disease activity was associated primarily with seasonal influenza B and H3N2 viruses, with a much smaller number of pandemic H1N1 influenza viruses. Australia has reported a gradual increase in the number of

respiratory disease consultations due to ILI since end of June to early July 2010 although this is of similar to the levels experienced in 2008. This increase of respiratory disease activity may be accounted for in part by circulation of respiratory syncytial virus (RSV). Influenza viruses in Australia have been about 2/3 pandemic H1N1 influenza and 1/3 seasonal influenza H3N2. In New Zealand, rates of ILI have markedly increased compared to the previous reporting week but still remained below the seasonal baseline, primarily associated with pandemic H1N1 influenza virus. In Chile and Argentina, national rates of ILI remained low relative to last year at the same period of time.

In Asia, overall pandemic influenza activity remained low. The most active areas of pandemic H1N1 influenza virus transmission are in India, Cambodia and Singapore. Significant transmission of pandemic H1N1 influenza is occurring in the Southern states of Kerala and the Western state of Maharashtra, India. Cambodia has recently observed an increase in the proportion of respiratory samples testing positive for influenza virus (primarily pandemic H1N1 influenza and seasonal influenza H3N2) since early June 2010. In Singapore, rates of ILI and acute respiratory infections (ARI) increased compared to previous week and reached the epidemic threshold. The proportion of patients with ILI testing positive for pandemic H1N1 influenza continues to be stable (15%) associated with co-circulation of pandemic H1N1 influenza, seasonal influenza H3N2, and influenza type B viruses.

In sub-Saharan Africa, the current situation was largely unchanged since the last update. Pandemic H1N1 and seasonal influenza activity continued to be observed in several countries. Ghana has had a sustained circulation of pandemic H1N1 influenza virus since June 2010. Small numbers of seasonal influenza H3N2 viruses continued to be detected in eastern Africa.

In the tropical regions of the Americas, the situation has remained similar to the previous week. Overall pandemic and seasonal influenza activity were low, except in pockets of Central and South America with co-circulation of pandemic and seasonal influenza H3N2 viruses (Costa Rica had predominantly pandemic H1N1 influenza virus, while Nicaragua and Panama had predominantly influenza H3N2 virus).

In the temperate regions of the Northern hemisphere, pandemic and seasonal influenza viruses have been detected only sporadically or at very low levels during the past month.

Weekly reporting of influenza activity to the CDC has concluded for the 2009-2010 season.

For additional flu vaccination and education information, the MDCH *FluBytes* newsletter is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

National, Antivirals (Reuters Health, July 20): Guidance on the dosing of oseltamivir (Tamiflu) for premature neonates exposed to H1N1 influenza has been published online in the Journal of Infectious Diseases for August 15th.

Oseltamivir is approved for treating 2009 influenza A (H1N1) infection in full-term infants at 3 mg/kg twice daily, but preemies with their underdeveloped renal function probably require a lower dosage than term infants, say lead author Dr. Edward P. Acosta, with the University of Alabama at Birmingham School of Medicine, and colleagues.
"Now we at least have some initial dosing guidance for oseltamivir in premature babies with influenza or influenza exposure, whereas before we did not," Dr. Acosta told Reuters Health by e-mail.

Because it would be unethical to perform a dose-finding trial in otherwise healthy premature babies, the team had a protocol in place to collect pharmacokinetic data in multiple NICUs when exposure necessitated oseltamivir treatment or prophylaxis.

They describe a situation where an H1N1-infected healthcare worker exposed 32 preemies in the NICU, and "the treating neonatologist elected to administer oseltamivir prophylactically to these neonates." The dose of 1.5 mg/kg twice daily for 10 days was "an educated guess."

"This was an opportunistic study, and without this type of opportunity I'm not sure how we would ever figure out the appropriate dosing of oseltamivir in this population," Dr. Acosta said. "We were very fortunate that the parents and treating physicians understood the importance of the situation and elected to work with us."

A single blood sample was collected from available babies after the fifth dose. In the end, 20 of them were enrolled in the pharmacokinetic sampling study. The modeled results suggested that 1.0 mg/kg twice daily achieves oseltamivir carboxylate exposures in premature neonates (<38 weeks) comparable to that in infants and young children receiving 3 mg/kg twice daily, the researchers report.

This conclusion "is as accurate as possible given the data on hand," Dr. Acosta added, "but additional pharmacokinetic data from a more optimally designed trial are still needed."

One final point: the efficacy of oseltamivir in premature babies could not be assessed in the study. "All the babies were exposed but did not have confirmed infection at the time of treatment," Dr. Acosta noted. "Our study was designed to simply try and define the pharmacokinetics of the drug and use those data to provide dosing guidance. Fortunately none of the babies developed influenza infection."

International, Human (WHO, July 29): The Ministry of Health of Egypt has announced a new human case of A(H5N1) avian influenza infection. The case is a 20 year-old female from Shobra Elkhima district, Qliubia Governorate. She was admitted to hospital on 21 July, placed on a ventilator, and received oseltamivir treatment. She died on 27 July. Investigations into the source of infection indicated that the case had exposure to sick and dead poultry. The case was confirmed by the Egyptian Central Public Health Laboratories, a National Influenza Center of the WHO Global Influenza Surveillance Network (GISN). Of 110 lab-confirmed cases of avian influenza A(H5N1) reported in Egypt, 35 have been fatal.

International, Human (Diabetes Care abstract, July 26): Diabetes and the Severity of Pandemic Influenza A (H1N1) Infection. Authors: Robert Allard, MD, Pascale Leclerc, MSC**,** Claude Tremblay, MSC**,** Terry-Nan Tannenbaum, MD

OBJECTIVE: To confirm the existence of an increased risk of complications from influenza A (H1N1)p among patients with diabetes.

RESEARCH DESIGN AND METHODS: Using data from an enhanced influenza surveillance project in Montreal, Canada, and age/sex-specific population estimates of diabetes prevalence, we estimated the risk of hospitalization among persons with diabetes. Comparing hospitalized patients admitted or not to an intensive care unit (ICU), we estimated the risk of ICU admission associated with diabetes, controlling for other patient characteristics.

RESULTS: Among 239 hospitalized patients with PCR-confirmed influenza A (H1N1)p, 162 (68%) were interviewed, of whom 22 had diabetes, when 7.1 were expected (prevalence ratio 3.10 [95% CI 2.04–4.71]). The odds ratio for ICU admission was 4.29 (95% CI 1.29–14.3) among hospitalized patients with diabetes compared to those without.

CONCLUSIONS: Diabetes triples the risk of hospitalization after influenza A (H1N1)p and quadruples the risk of ICU admission once hospitalized.

Michigan Wild Bird Surveillance (USDA, as of July 29): For the 2010 season (April 1, 2010-March 31, 2011), highly pathogenic avian influenza H5N1 has not been recovered from 7,320 samples tested nationwide, including 543 Michigan samples (5 live bird, 528 hunter-killed birds, 10 morbidity/mortality). For more information, visit the HPAI Early Detection Data System at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at http://www.michigan.gov/emergingdiseases.

International Poultry and Wild Bird Surveillance (OIE): Reports of avian influenza activity, including summary graphs of avian influenza H5N1 outbreaks in poultry, can be found at the following website: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm.

For questions or to be added to the distribution list, please contact Susan Peters at PetersS1@michigan.gov

Contributors

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MDCH Bureau of Laboratories – Anthony Muyombwe, PhD; Victoria Vavricka, MS

Table 1. H5N1 Influenza in Humans - Cases up to July 29, 2010. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_07_29/en/index.html. Downloaded 7/29/2010. Cumulative number of lab-confirmed cases reported to WHO. Total cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		2010		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	1	0	1	1	10	8
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	1	1	39	26
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	39	4	20	8	110	35
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	21	19	5	4	167	138
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	5	5	7	2	119	59
Total	4	4	46	32	98	43	115	79	88	59	44	33	73	32	34	16	502	298